

☒ Applicant Alain GEORGES ☐ Patentee
☒ Application No. 09/ ☐ Patent No.
☒ Filed on 10/17/2000 ☐ Issued on

Title: VIRTUAL RADIO

**STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) and 1.27(b))—INDEPENDENT INVENTOR**

As a below named inventor, I hereby state that I qualify as an independent inventor, as defined in 37 CFR 1.9(c), for purposes of paying reduced fees to the United States Patent and Trademark Office under Sections 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office, with regard to the invention described in

- ☒ the specification filed herewith, with title as listed above.
☐ the application identified above.
☐ the patent identified above.

I have not assigned, granted, conveyed or licensed, and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c), if that person had made the invention, or to any concern that would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ No such person, concern, or organization exists.
☐ Each such person, concern or organization is listed below.*

**NOTE: Separate statements are required from each named person, concern or organization having rights to the invention as to their status as small entities. (37 CFR 1.27)*

FULL NAME _____
ADDRESS _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____
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I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

(check the following item, if desired)

*NOTE. The following verification statement need not be made in accordance with the rules published on Oct. 10, 1997, 62 Fed. Reg. 52131, effective Dec. 1, 1997.

*NOTE: "The presentation to the Office (whether by signing, filing, submitting, or later advocating) of any paper by a party, whether a practitioner or non-practitioner, constitutes a certification under § 10.18(b) of this chapter. Violations of § 10.18(b)(2) of this chapter by a party, whether a practitioner or non-practitioner, may result in the imposition of sanctions under § 10.18(c) of this chapter. Any practitioner violating § 10.18(b) may also be subject to disciplinary action. See §§ 10.18(d) and 10.23(c)(15)." 37 C.F.R. § 1.4(d)(2)

☒ I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

ALAIN GEORGES
Name of inventor

Signature of Inventor

Date

16-OCT-2000

Name of inventor

Signature of Inventor

Date

Name of inventor

Signature of Inventor

Date

Name of inventor

Signature of Inventor

Date

VIRTUAL RADIO

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Background of the Invention

(a) Field of the Invention

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The current invention relates to a device that simulates a radio station including a player of musical pieces that are either recorded and digitized, or synthesized.

(b) Description of Related Art

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Various devices capable of playing recorded and digitized pieces have already been developed, such as digital compact disc players, players of compressed files (for instance in accordance with the MPEG-level 3 standard), etc. Furthermore, there exist also devices that are based on synthesizers of instrumental sounds on which are applied, for instance as per the MIDI (Musical Instrument Digital Interface) standard, "scores" of notes that are composed automatically. Finally there exist devices incorporating a tuner, which permits reception of radio broadcasts via electromagnetic waves.

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Summary of the Invention

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The present invention represents an improvement of the aforementioned devices by simulating the reception of a radio station by the use of one or several of the aforementioned functions. Further, the invention permits selection of musical pieces, by a user, either from a library in which musical pieces are stored as compressed musical files, MIDI files or other similar types of files, from pieces recorded or output from the output of a radio receiver, or from

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pieces that are composed in a pseudo-random fashion using a synthesizer function to play original musical pieces.

Thus, the present invention provides for selection according to a pre-selected musical style, in a pseudo-random fashion or according to a pre-defined criteria (such as may be input or controlled by a user), of audio files to be played from a speaker, wherein the audio files meet the pre-defined criteria and are either extracted from the library or generated by an automatic composition function. Further, the recording of or the automatic generation of sentences that mimic the speech of a “disc-jockey” or of an announcer permits combination of speech passages with the musical pieces being played, thereby giving the user the illusion that he is listening to an actual radio station.

Brief Description of the Drawings

The above objects and other advantages of the present invention will become more apparent by describing in detail the preferred embodiments of the present invention with reference to the attached drawings in which:

Figure 1 is a block diagram of the system of the present invention.

Detailed Description of the Preferred Embodiments

The present invention will be described in greater detail with reference to certain preferred and alternative embodiments. As described below, refinements and substitutions of the various embodiments are possible based on the principles and teachings herein.

According to the functional diagram of Figure 1, a typical embodiment of the invention comprises essentially a processor 1, a memory 2 containing a music database for use by an automatic composition algorithm (such as disclosed in co-pending U.S. App. Ser. No. _____, filed on event date herewith and entitled “Interactive Digital Music Recorder and Player,” which is hereby incorporated by reference), a memory 3 storing the sound samples, a musical synthesizer 4, a summation and digital to analog conversion circuit 5, a radio receiver 6 and a memory 7, internal or external to the invention, containing a library of digitized musical files, wherein these elements are interconnected as shown (the digitized musical files may contain, for

example, CD music files, MP3 music file or other compressed/digitized music files). The memory elements 2, 3 and 7 can be made of one component or several physically distinct components. Processor 1 is in communication with the memory elements and is able to select, according to certain criteria, musical files out of the library of musical files or is able to compose automatically, according to the automatic composition algorithm, a melody out of the database stored in memory 2. The automatic composition algorithm also utilizes the sound samples stored in memory 3, which may include some speech sentences, in such a way that processor 1 delivers in synchronism on its outputs a control signal M1 connected to synthesizer 4 and a sound sample control signal S2. Output signal M2 of the synthesizer and sound sample control signal S2 are then summed and converted to analog form in circuit 5 that provides the complete audio signal MA3 for connection to a speaker or speakers (not shown). In a similar way, the output of radio receiver 6 can be mixed upstream, as a digital signal (e.g., received and converted by processor 1 and stored in a memory, such as memory 3 or perhaps memory 7, etc.), or downstream, as an analog signal, of circuit 5 to add a supplementary sound source to the complete audio signal MA3. The audio signal MA3 forms the output of the invention that can then be played by the aforementioned speakers in a stereo system.

In a preferred embodiment of the invention, the processor is made of a microprocessor or microcontroller linked to one or several memories. A RAM memory (volatile memory) can serve as the working memory of the microprocessor and can be used to store the sound samples 3, whereas a ROM or EPROM memory can store the microprocessor program and the music database 2 used by the automatic composition algorithm. However, a greater flexibility will be granted by non-volatile memories: RAM memory saved by a disposable or rechargeable battery, or Flash EEPROM memory (electrically erasable). The non-volatile memory can be used at the very least to store the sound samples in memory 3 (and perhaps the other memories as well), so that they are saved when the invention is powered off. It can also be used to store the music database in memory 2 for use by the automatic composition algorithm, the digitized musical files of the library 7, as well as a microprocessor operating program. This permits easy update of the music database and the microprocessor operating program by means of downloading updates.

Processor 1 can also be used to select the sound source or sources, including radio receiver 6 or one of the sources in memories 2, 3 and 7 described above. It can also be used to select one of a number of preset radio stations, including either actual radio stations or illusory

radio stations. Illusory stations in reality play sound samples and musical pieces that have been stored in digital form or that are composed automatically as described herein. Moreover, a sound input device, such as a microphone 8, is useful to input voice signals, encoded in memory and preferably stored in memory 3, to be used in construction of illusory radio station sound patterns.

5 The present invention may also be utilized in a video recorder/camera or player or other device, including a PBX-type of device for generating on-hold music in an integrated matter, including such as is described in co-pending U.S. App. Ser. No. _____ filed on even date herewith for "Automatic Soundtrack Generator," which is hereby incorporated by reference.

Also, it will be understood that the criteria by which the virtual radio device as
10 contemplated herein will operate responsive to one or more switch inputs or the like, or to commands entered via a graphical interface such as may be presented, under control of the processor, on an LCD or other display, which may be integral with and/or external to the device. In such a manner, the user may specify the output of the virtual radio, such as by "tuning" the radio to different audio sources, which may include the selection of styles or types of music (e.g.,
15 dance, techno, hip-hop, rap or cool, with substyles such as ballad, new age, Latin, etc.), having selections played in accordance with an order specified by user, or by random or pseudo-random selection under control of the processor, etc.

Although the invention has been described in conjunction with specific preferred and other embodiments, it is evident that many substitutions, alternatives and variations will be
20 apparent to those skilled in the art in light of the foregoing description. Accordingly, the invention is intended to embrace all of the alternatives and variations that fall within the spirit and scope of the appended claims. For example, it should be understood that, in accordance with the various alternative embodiments described herein, various systems, and uses and methods based on such systems, may be obtained. The various refinements and alternative and additional
25 features also described may be combined to provide additional advantageous combinations and the like in accordance with the present invention. Also as will be understood by those skilled in the art based on the foregoing description, various aspects of the preferred embodiments may be used in various subcombinations to achieve at least certain of the benefits and attributes described herein, and such subcombinations also are within the scope of the present invention.

30 All such refinements, enhancements and further uses of the present invention are within the scope of the present invention.

What is claimed is:

1. A Virtual Radio device capable of selecting, according to given criteria, musical files from predetermined sound sources for playing from a speaker, comprising a processor 1 providing a digital output, a memory element 2, 3, 7 connected to said processor for storing the given criteria and the predetermined sources of musical files connected to said processor, and a summation and digital to analog conversion circuit 5 connected to receive said digital output and providing a predetermined analog sound output.

2. A Virtual Radio device as set forth in Claim 1, further comprising a digital musical synthesizer for adding MIDI files that are pre-recorded or composed automatically, according to the given criteria, to the predetermined sound sources.

3. A Virtual Radio device as set forth in claim 1, comprising a radio receiver providing a sound output used as an additional selectable sound source.

4. A Virtual Radio device as set forth in claim 3, comprising means for providing voice files within the predetermined sound sources for combination with said radio receiver sound output.

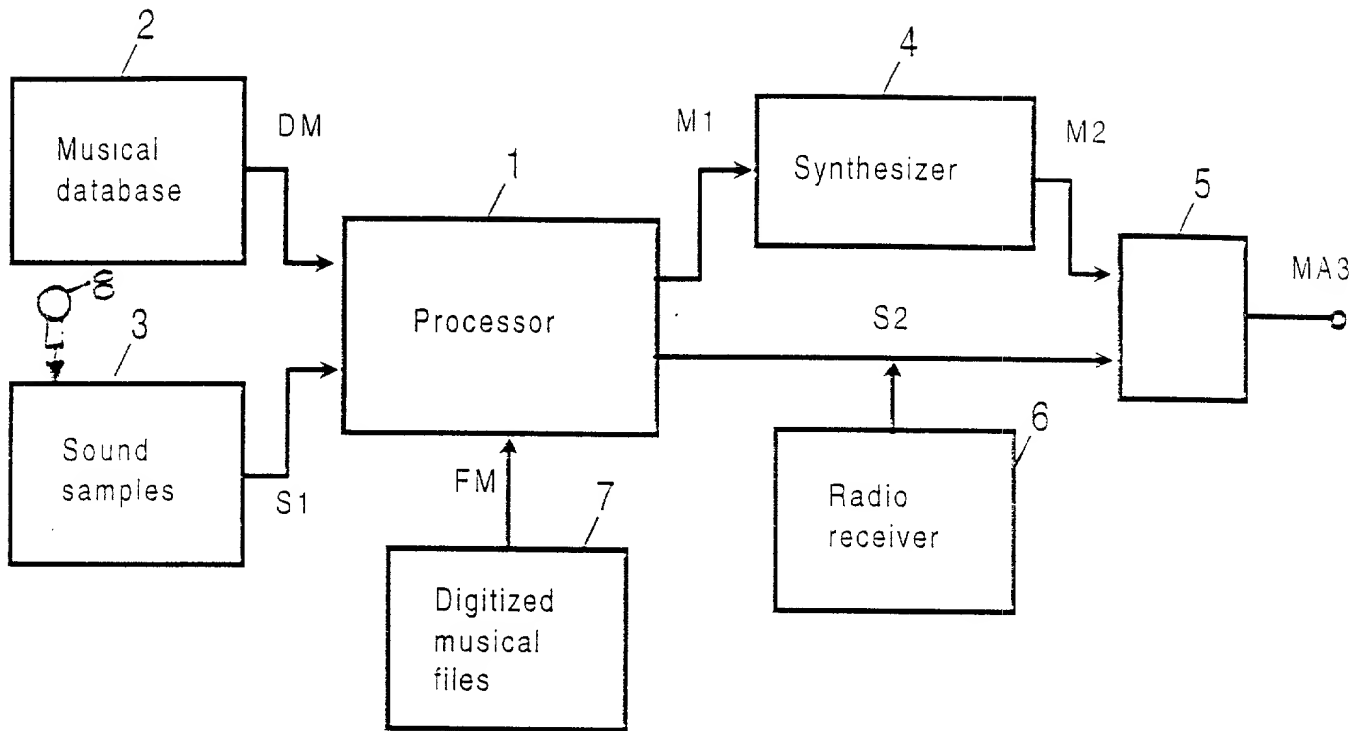
5. A Virtual Radio device as set forth in claim 1 wherein sound samples are pre-recorded in the predetermined sound sources and recorded by a user, comprising means for mixing speech sound with the musical files.

2. 4. 2

Abstract

5 A Virtual Radio device permits simulation of a radio station on a player of musical pieces wherein the musical pieces are either recorded and digitized, or synthesized.

The Virtual Radio device selects in a pseudo-random fashion, or according to predetermined criteria, some musical files that are pre-recorded or automatically composed and that meet the predetermined criteria. The Virtual Radio includes a processor, a memory containing a music database, a store of sound samples and a library of digitized musical files, an optional musical synthesizer, a summation and digital to analog conversion circuit and a radio receiver.



DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

INVENTOR AND SPECIFICATION IDENTIFICATION

My residence, post office address and citizenship are as stated below next to my name, I believe that I am the original, first and sole inventor (*if only one name is listed below*) or an original, first and joint inventor (*if plural names are listed below*) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

VIRTUAL RADIO

TITLE OF INVENTION

the specification of which:

X is attached hereto.

_____ was filed on _____ as Application Serial No. _____
and was amended on _____ (*if applicable*).

_____ was described and claimed in PCT International Application No. _____ filed on _____
and amended under PCT Article 19 on _____ (*if any*).

REVIEW OF PAPERS AND ACKNOWLEDGMENT OF DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I do not know and do not believe that the invention claimed in the above-identified specification was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, and that the same was not in public use or on sale in the United States of America more than one year prior to this application.

I acknowledge the duty to disclose to the Patent and Trademark Office information which I know is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56.

FOREIGN APPLICATIONS AND PRIORITY CLAIM

The invention claimed in the above-described specification has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application. I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 37 USC 119
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No

DOMESTIC PRIORITY CLAIM

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States patent application(s) listed below and, insofar as this application discloses or claims subject matter in addition to that disclosed in the below listed priority applications, I acknowledge the duty to disclose to the Patent and Trademark Office all information known by me to be material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date(s) of the below-listed prior application(s) and the national or PCT international filing date of this application.

(APPLICATION SERIAL NO.)	(FILING DATE)	(STATUS PATENTED, PENDING, ABANDONED)
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(APPLICATION SERIAL NO.)	(FILING DATE)	(STATUS PATENTED, PENDING, ABANDONED)
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POWER OF ATTORNEY

I hereby appoint Alan R. Loudermilk (Reg. No. 32,788), who is registered to practice before the Patent and Trademark Office, as my attorney with full power of substitution and revocation, to prosecute this application, to make alterations or amendments therein, to receive the patent and transact all business in the Patent and Trademark Office connected therewith.

All **CORRESPONDENCE** should be addressed to:

Loudermilk & Associates
10950 N. Blaney Avenue Suite B
Cupertino, CA 95014

All **TELEPHONE INQUIRIES** may be directed to Alan R. Loudermilk at (408) 342-1866.

I hereby declare I have read this Declaration, and that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by

HAND PRINT DATE BEFORE SIGNING

Post Office Address _____